

AMENDMENTS TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A method for modeling an implant to be applied to a defect of a bone, the defect having side walls, comprising ~~the steps of:~~

obtaining a plurality of tomographic image data of the bone based on magnetic resonance imaging (MRI) measurement data by MRI, the tomographic image data being obtained by inverting a threshold value of the MRI measurement data to obtain threshold value inverting data, and extracting a bone region from the threshold value inverting data;

producing three-dimensional image data of the bone based on the plurality of tomographic image data; and

estimating a shape of a missing ~~bone~~ bone that was previously present or should have been present in the defect of the bone to obtain three-dimensional data of the implant, wherein the three-dimensional data of the implant is modeled such that at least a part of the an outer periphery of the implant is conformable with the a shape of the side walls of the defect of the bone.

2. (Canceled)

3. (Currently Amended) The method as claimed in claim 1, wherein ~~the estimating step comprises the steps of:~~

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estimating a provisional shape of the implant which has a contour conformable with the shape of a contour of a periphery of the side walls of the defect at ~~the~~ a distal surface of the bone and has a predetermined thickness; and

deleting data of portions of the provisional shape of the implant that overlap the bone from the data of the provisional shape of the implant so that the three-dimensional data of the implant has an outer peripheral shape that is conformable with the shape of the side walls of the defect.

4. (Currently Amended) The method as claimed in claim 1, wherein ~~the~~ estimating ~~step~~ comprises ~~the steps of~~:

producing data of a contour of a distal surface of the implant so that the contour is conformable with the shape of a contour of a periphery of the side walls at ~~the~~ a distal surface of the bone;

estimating a provisional shape of the implant which has a predetermined thickness and has a substantially predetermined shape in the thickness direction thereof using the data of the contour of the distal surface of the implant; and

deleting data of portions of the provisional shape that overlap the bone from the data of the provisional shape of the implant so that the three-dimensional data of the implant has an outer peripheral shape that is conformable with the shape of the side walls of the defect.

5. (Currently Amended) The method as claimed in claim 1, wherein ~~the~~ estimating ~~step~~ comprises ~~the steps of~~:

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producing data of a contour of a distal surface of the implant so that the contour is conformable with the shape of a contour of a periphery of the side walls at the a distal surface of the bone;

estimating a provisional shape of the implant which has a predetermined thickness and has a substantially predetermined shape in the thickness direction thereof using the data of the contour of the distal surface of the implant; and

correcting the data of the provisional shape so that the three-dimensional data of the implant has an outer peripheral shape that is conformable with the shape of the side walls of the defect by comparing the estimated data of the provisional shape of the implant with the data of the side walls of the three-dimensional image data.

6. (Currently Amended) The method as claimed in claim 1, wherein when the implant is applied to the defect of the bone, the and a distal surface of the implant forms a continuous surface with the distal surface of the bone.

7. (Currently Amended) The method as claimed in claim 1, wherein the bone substantially has plane symmetry, in which the estimation of the shape of the missing bone is carried out by utilizing data of a portion in of the three-dimensional image data which is plane-symmetrical with the defect in the three-dimensional image data.

8. (Original) The method as claimed in claim 1, wherein the bone is a cranium bone.

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9. (Currently Amended) The method as claimed in claim 1, wherein the plurality of tomographic images for producing the three-dimensional image data are taken with a predetermined slice interval between the adjacent images, in which the slice interval is in the range of 0.1 to 5mm.

10. (Previously Presented) An implant which is manufactured based on a model prepared in accordance with the modeling method as defined in claim 1.

11. (Currently Amended) The implant as claimed in claim 10, wherein the implant is manufactured through a manufacturing process which comprises:

~~a first step for forming a layer made of material powder; and~~

~~a second step for hardening the material powder by making at least a part of the layer contact with a reaction liquid,~~

wherein ~~the first step and the second step~~ forming and hardening are carried out repeatedly to obtain a laminate comprised of a plurality of the layers, thereby manufacturing an implant having a shape corresponding to the three-dimensional data of the implant provided by the modeling method.

12. (Original) The implant as claimed in claim 10, wherein the implant has a porosity of 10 to 90vol%.

13. (Canceled)

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14. (Previously Presented) An implant which is manufactured based on a model prepared in accordance with the modeling method as defined in claim 3.

15. (Previously Presented) An implant which is manufactured based on a model prepared in accordance with the modeling method as defined in claim 4.

16. (Previously Presented) An implant which is manufactured based on a model prepared in accordance with the modeling method as defined in claim 5.

17. (Previously Presented) An implant which is manufactured based on a model prepared in accordance with the modeling method as defined in claim 6.

18. (Previously Presented) An implant which is manufactured based on a model prepared in accordance with the modeling method as defined in claim 7.

19. (Previously Presented) An implant which is manufactured based on a model prepared in accordance with the modeling method as defined in claim 8.

20. (Previously Presented) An implant which is manufactured based on a model prepared in accordance with the modeling method as defined in claim 9.